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ABSTRACT

The paper describes procedures that may be used by educational teams to obtain and organize formal and informal data regarding children's primary language skills. The procedures are explained to involve attention to linguistic components, linguistic processes, and the referential or conceptual system represented by observable language behavior. Procedures are also noted to emphasize the need for interdisciplinary cooperation and to be adaptable to future developments related to speech-language assessment. (Author/SBH)

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INTERDISCIPLINARY EVALUATION OF CHILDREN'S PRIMARY LANGUAGE SKILLS

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ABSTRACT

This paper describes procedures that may be used by educational teams to obtain and to organize formal and informal data regarding children's primary language skills. The procedures involve attention to linguistic components, linguistic processes and the referential or conceptual system represented by observable language behavior. They emphasize the need for interdisciplinary cooperation and are adaptable to future developments related to speech-language assessment.

The development of primary language skills--verbal comprehension and oral expression--significantly relates to children's achievements in other language modes. In fact, primary language skills are prerequisite to literacy; reading is dependent on language (Mattingly, 1972). Consequently, the educational assessment of children with special needs, many of whom demonstrate auditory-verbal problems, should include a comprehensive speech-language evaluation.

There is no single test or instrument that measures all aspects of primary language skills. As a result, it is necessary to use a variety of tests and techniques, formal and informal, to piece together protocols that facilitate identifying children's linguistic strengths and weaknesses. This process depends on the cooperation of teachers, speech-language pathologists, psychologists and reading specialists, all of whom use assessment techniques which provide data pertinent to children's auditory-verbal skills.

For example, with the exception of tests of articulation--usually regarded as the sole territorial right of speech-language pathologists--most instruments designed to measure one or more aspects of auditory-verbal behavior may be administered by any of the several members of an educational team. However, other specialized tests, restrictively used by specific team members, (e.g., intelligence tests, achievement tests), also may provide information about children's primary linguistic skills. A comprehensive speech-language evaluation, therefore, requires an integration of all of the applicable data collected by various evaluators.

In order to accomplish this objective it is necessary for professionals

to share a common frame of reference. This paper describes the procedures for doing so. These procedures facilitate inter-disciplinary input and enable educational teams to coordinate the evaluative data necessary for planning speech-language remediation. Furthermore, they are adaptable to future theoretical and philosophical developments concerning the assessment and management of children with verbal communicative disorders.

DEFINITION OF LANGUAGE

Because of its focus on the vocal system as a means of communication, the definition of language presented by Carrow (1972) represents an appropriate point of departure. She states:

> "Language may be functionally defined as an arbitrary system comprised of vocal symbols which represent a conceptual system used by man to communicate. This linguistic code is expressed orally in speech and graphically in writing. Essential to language is the relationship between the two systems, linguistic and conceptual" (p. 54).

This definition indicates that a speech-language evaluation should consider a) the linguistic code, b) the conceptual or referential system represented by this code and, c) the inter-relations among these factors. In other words, the assessment should include measures of the observable aspects of a child's speech-language behavior, as well as considerations of the conceptual system that underlies them.

EVALUATION OF THE LINGUISTIC CODE

Analysis of the linguistic code involves a process-by-component organizational technique (Freeman, 1977). It entails classifying evaluative data regarding a child's ability to decode phonology, semantics and syntax, as well as to encode each of three components, providing six cells of information (Fig. 1). This scheme enables evaluators to collate

related data from various sources according to the predominant process-component involved in a child's speech-language.

LINGUISTIC COMPONENTS	PROCESS	
	DECODING	ENCODING
Phonological	1	2
Semantic	3	4
Syntactic	5	6

Fig. 1. Scheme for organization of linguistic evaluative data

Some formal tests have been developed to measure a single process-component such as decoding/phonemes or encoding/syntax. The data obtained from these tests may be readily classified into a single cell. At other times, speech-language measures have been designed to provide information regarding several process-component pairs and may be classified accordingly. Similarly, a child's responses to auditory-verbal tasks on any test may be classified according to their linguistic process-component characteristics.

For example, the Peabody Picture Vocabulary Test (Dunn, 1965) requires a child to select one of four pictures on the basis of its name. Its results clearly fall within the semantic decoding cell. The Northwestern Syntax Screening Test (Lee, 1971) demands picture identification on the basis of the syntactic structure of stimulus sentences--syntactic decoding--then superimposes the task of expression by asking the child to repeat sentences--syntactic encoding. Similarly, the Comprehension Sub-Test of the Wechsler Intelligence Scale for Children--Revised (Wechsler, 1974) demands verbal responses to verbal questions, and may be used, first, to tap decoding/semantics, then to assess encoding/semantics.

Because of the widespread use of formal tests in the field of

education, professionals initially have found it easiest to use the suggested procedures in connection with formal speech-language instruments. Although the selection and administration of specific tests depend on the training, experience and competence of each evaluator, all team members should be aware of the limitations of using these instruments for a process-by-component linguistic analysis.

LIMITATIONS OF STANDARDIZED TEST

The validity of some formal speech-language tests is of concern. Because of the complexity and integrated aspects of auditory-verbal behavior, circumscribed linguistic processes or functions are frequently impossible to evaluate even if the title of a test indicates such a purpose. For example, although an auditory discrimination test (decoding/phonology) may require children's differentiating two rhyming words with a single phonemic variant, this task also involves auditory acuity (ability to hear), auditory memory (ability to retain the signals sufficiently long to compare them), and understanding of the concepts "same" and "different." Therefore, the fact that a child fails to perform at age level expectations on such a test may be important, although in itself the performance is insufficient evidence to regard the problem as restricted to auditory discrimination. Similar considerations should be exercised regarding the sub-skills involved in any test.

Most speech and language tests do not purport to assess all aspects of a given linguistic process-component. However, professionals tend to refer to scores on these tests as indicative of strengths or deficiencies in entire areas, as if they had been completely evaluated. For example, scores on picture vocabulary tests (decoding/semantics) actually indicate

the level at which children are able to match the names of objects or actions to pictorial representations. Although this task requires understanding of the stimulus words, it obviously does not include all aspects of semantic decoding. It should not be said, therefore, that the test scores are representative of "language comprehension."

A further complication is created when test items are removed from the actual demands of everyday communication. For example, a popular method of evaluating children's auditory sequencing abilities is based on the repetition of progressively longer series of digits. Not only is this a relatively non-essential communicative task but the relevance of coping satisfactorily with sequences of digits as opposed to sequences of words (decoding/syntax; decoding/semantics) in a phrase or sentence has not been established. Similarly, during picture identification tests, children may be asked to point to actions--"show me skipping"--a construction that normally is not used in conversational speech.

A number of artifacts that enter into testing situations must be considered: a) The limited sample of speech and language behavior observed in evaluative sessions may not reflect children's typical and varied linguistic performances, b) the variability among evaluators who administer tests is difficult to control, c) the populations of children on whom testing procedures have been standardized may be biased with respect to a given child and d) children with language problems may not understand the directions.

Finally, although one objective in administering speech-language tests is to establish skill-related base lines of behavior, at times a

child with a verbal communicative problem responds to formally presented stimuli in a manner unanticipated by the test's author(s). In these instances, the evaluator may find it necessary to use the testing procedure as a means of gathering informal rather than formal data. Although deviations from the established procedures of administration prevent standardized scoring, they often provide essential information for program planning. Therefore, evaluators should record all of a child's actual responses to tests rather than merely designating whether or not a specific response is correct. These observations, along with available test results, may then be collated and discussed within the previously described model.

EVALUATION OF THE CONCEPTUAL SYSTEM

Breakdowns in the linguistic code used by children are sometimes based on inadequate conceptual development. At one level a problem may involve a child's insufficient experiential background to support correct labeling (e.g., the child may call a circle "ball"); at another level, the problem may reflect the child's lack of the concepts inherent in linguistic structures (e.g., the child is unable to identify the actor in the statement, "The boy was hit by the girl," because he or she does not understand the passive structure). Evaluations of these kinds of relations between children's conceptual systems and their linguistic codes require an ongoing assessment of the children's language related-processes.

A procedural model for this type of assessment may be derived from language-learning theorists who have stated that a) sensory-motor experiences and perceptions of these experiences are contingencies to concept development and b) many words come to stand for or to name concepts which

were learned preverbally (Carroll, 1964; Clark, 1974). Under these circumstances, the basic processes involved in language development, although interrelated, may be identified as reception, perception, conceptualization, and verbalization.

The process of reception refers to sensory intactness. As related to language development, evaluations in this area most obviously focus on a child's auditory and visual acuity and should include immediate screening assessments of hearing and vision. In addition, however, informal observations in this area often provide information regarding the primary modes of input which may be used most effectively with specific children. Through diagnostic-teaching, the evaluator should attempt to probe the types of approaches--visual, auditory, tactile, multi-sensory--through which each child seems to learn best. This information is used to guide the predominant style of presentation of remedial procedures.

Perception, as used in this context, refers to distinguishing the finite physical characteristics or attributes of stimuli. A child who capably sees three shapes, for example, still may have difficulty distinguishing the specific forms. Although the child's visual acuity, or reception, is intact, his or her sensory-perceptual skills are inadequate. Similarly, a child's hearing acuity may be sufficiently sensitive to detect two sounds of equal intensity, though she or he may experience difficulty distinguishing between them.

From an educationally pragmatic viewpoint, conceptualization involves the ability to categorize attributes of objects and events according to societal practices. For example, given two containers of equal size and shape--one styrofoam and one clear plastic--a person automatically

classifies the former as a cup and the latter as a glass. He or she then assigns labels to these concepts. Verbalization, therefore, involves learning to say and use the actual words, "cup" and "glass" when faced with these two objects.

Despite the inter-relations among reception, perception, conceptualization and verbalization, evaluators may record observations of children's behaviors that are suggestive of predominant breakdowns in one or several of these processes. It is postulated that these difficulties interfere with speech-language learning. Therefore, information about them is basic to the organization of remedial strategies and programs.

For example, a child recently seen for an evaluation consistently demonstrated limited verbal output; she characteristically responded to language by using appropriate gestures or pantomimes. After a series of diagnostic sessions it appeared that this child's concept development was generally intact; her breakdown in speech-language seemed to be at the level of verbalization. Consequently, her remedial program focused on eliciting verbal responses.

In contrast to this case is that of a boy who was consistently confused by Wh question forms. Again, following several diagnostic-teaching sessions, it was postulated that his problem was due to a) inadequate comprehension of the concepts which underlie Wh interrogative words (e.g., "when" questions imply knowledge of temporal concepts; "why" questions imply knowledge of cause and effect) or b) syntactic confusions. The data collected by the evaluators ultimately indicated that the child lacked the basic concepts inherent in Wh words. As a result, it was deemed advisable to teach these concepts prior to stressing language usage.

The evaluation of the conceptual system largely depends on observations. The essential aspect of this procedure is not the test or series of items used to evaluate specific language-related areas, but the organization of responses in terms of their possible relations to reception, perception, conceptualization, and verbalization.

DISCUSSION

Although combining information about the linguistic code with an ongoing assignment of language-related processes may fall short of providing measures of total language function, it enables evaluators to use formal and informal data: a) to investigate various dimensions of the symptomatic behavior, b) to establish base line behaviors for linguistic components, c) to analyze process-component relations inherent in linguistic tasks, d) to relate the linguistic code to its conceptual bases, and e) to formulate remedial strategies. Furthermore, these procedures acknowledge the value of diagnostic-teaching as a critical component of the speech-language assessment.

When reviewed at given time intervals, the process-by-component scheme for speech-language analysis is a suitable means to obtain a series of descriptions of a child's speech-language behavior in which temporal changes may be noted. In addition, as new tests and standards of measurement become available, they may be substituted for old ones, or added to the scheme.

Similarly, in the near future the model will have to be expanded to accommodate emerging knowledge and information regarding the pragmatics of language, along with phonology, semantics and syntax.

Finally, a valid speech-language evaluation also must consider children's spontaneous communication in natural environments. In the last analysis, it is the effectiveness of communication under these circumstances that is of ultimate importance. The data collected through diagnostic-teaching, therefore, is as important for program planning as those acquired through more formal procedures.

The challenge of the future requires that special educators and related professionals develop an increased awareness of the relations between the development of children's auditory-verbal skills and their academic achievement. In this context, the speech-language assessment becomes a critical step in educational planning for children with special needs. This assessment requires that educational team members, although representatives of specific disciplines, assume responsibilities as potential contributors to the speech-language evaluative process and that teams develop systematic methods for organizing linguistic data in a manner that is understandable and useful to all. The ideas presented in this paper are intended to stimulate professionals to move in this direction as they continue to improve their services to children.

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